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It appears from these letters that the observations in India were made from twelve to ten hours before the beginning of the shower which visited America; and accordingly that the *Leonids* observed in India were a few *clino-Leonids*, the sparse shower of which lasts several days. On the other hand, the much denser display which was seen in America was fortunately observed from its commencement till its close. It was thus ascertained that it lasted only a moderate number of hours; from which we may infer that the Earth has this year passed through the extreme front of the main stream, which consists of *ortho-Leonids*, and the denser parts of which produce the imposing spectacle in the Earth's atmosphere of Great November Showers.

Observations of Meteors made at the Royal Observatory, Cape of Good Hope, on 1898 *November* 13 *and* 14. By David Gill, C.B., F.R.S., &c., Her Majesty's Astronomer.

Besides provision for eye observations, five cameras were exposed from midnight till daylight on November 13 and 14. These were arranged so as to cover an area of the sky limited by two circles of about 20° and 50° in radius, having their common centre in the radiant (R.A. 10^h, Decl. +22°). A Cooke doublet of 5 inches aperture and 19 inches focus was directed to the radiant as soon as it had risen sufficiently above the horizon. All these cameras were attached to equatorials driven by clockwork and carefully guided throughout the exposure. The plates were exchanged every hour.

Besides an observer, whose duty it was to attend to the guiding of each telescope, another observer was on the watch with each telescope to record the time and position of every meteor that crossed the field covered by each particular camera. The sky was perfectly clear, but no meteors of remarkable brilliancy crossed the fields of the cameras, and those approaching the brightness of 1st magnitude stars moved so swiftly as not to impress any visible record on the plate.

The meteors in the area of Pickering's charts of the radiant were specially observed by Mr. J. Power. Mr. Innes observed the sky towards the south-east, and Mr. W. de Sitter more particularly to the north-east.

Messrs. Power and de Sitter were chiefly on the outlook for meteors radiating from *Leo*, but they also noted a good many radiating from *Orion*. Mr. Innes endeavoured to note all the meteors visible in the area watched by him.

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Meteors observed at the Royal Observatory, Cape of Good Hope, on 1898 *Nov.* 13–14.

Greenwich Mean Time 1898 Nov. 13.			Mag.	Colour.	Path				Notes.	Observers.
					From.		To.			
					R.A.	Decl.	R.A.	Decl.		
h	m	s			°	°	°	°		
12	3	45	1	...	95	+37½	62	+38	... ...	D. S.
12	13	34	3	Y	146½	+ 9	142½	+20		J. P. and D.
...			...	...	...		...		... ...	”
12	22	34	1	BW	151	+ 7	149	+13	... ...	”
13	12	59	...	...	87½	−29	67	−16	... ...	”
13	29	9	3	Y	148 148	+20 +16	152½	+17	First half of path not seen by D. S.	”
14	2	54	4	”	152	+23	152	+29	... ...	”
14	6	0	3	”	147½	+25	149	+30	... ...	J. P.
14	6	4	1	”	153½	−12½	167	−27	... ...	D. S.
Nov. 14.										
12	39	56	0	Ruddy	101	+24	96	+35	Green train	J. P. and D.
13	2	54	0	W	83	+ 1	70	+ 2	Disappeared behind house. Streak	”
13	5	45	3½	Y	147	+23½	149	+28		”
13	14	13	−2	YW	150	+22½	147½	+23½	Very bright train	D. S.
13	22	49	0	...	117½	+ 7½	100	+15	... ...	J. P.
13	23	56	−2	BW	139	+23	114	+33	Long green train, 4 secs. duration	J. P. and D.
13	28	56	−3	”	111	+34½	87	+38	Green train. Disappeared behind house	”
13	29	26	0	...	100	−2	107	+35	... ...	”
13	31	58	4	...	152½	+24	155	+26	... ...	”
13	40	30	3½	...	152½	+24	155	+26	... ...	”
13	43	46	2	BW	149	+ 8½	152	+17½	Train. Slow	”
13	49	17	2½	”	151½	+19½	156	+13	Slow	”
13	53	57	−2	”	148	+20½	132½	+22	Green train. Slow	”
13	58	15	2	W	160	+22	168	+20	Short train.	”
14	16	28	−1½	...	152½	+19	162	+17	Green train. Very slow	”
14	20	2	2	...	114	+32½	94	+37	Green train	”
14	23	19	2½	...	144	+22	136	+23	Streak	”
14	29	36	−1½	...	151½	+16	163	+ 6	Green train. Slow	”

Observers
J. P. = John Power.
D.S. = W. de Sitter.
I. = R. T. A. Innes.

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G.M.T. 1898 Nov. 13.		Mag.	Path From.	To.	Notes.	Observer.
h	m					
12	10	...	...		Commenced watch. No cloud	I.
12	15	3	...		Two, short paths, swift, both towards west	„
12	20	3	...		In S.W. Got brighter—swift	„
12	25	1	...		Not a Leonid	„
12	30	3	...		Swift, across zenith {Both from, say, Aries to Canopus, but only 10° in length	„
12	41	1	...		Not a Leonid	
					(The Leonids are about 15° to 20° in length.)	
12	50	2	160°–64°	179°–78°	θ Argûs to ϵ Chameleontis, 8°, swift. The lengths of the paths are from estimates made at time of observation	„
12	54	3	...		Not a Leonid. Near α Eridani, due N. to S.	„
13	1	4	178–76	195–75	Very short. κ Chameleontis to $13^{h}\ 0^{m}-75^{\circ}$. Not a Leonid	„
13	5	3	...		Very short, not a Leonid. N. to S. near β Hydræ	„
13	15	3	...		„ „ Near α Circini	„
13	16	3	...		„ „ Near α Leonis. Direction Procyon to α Leonis	„
13	21	2	...		Fine trail 5°, near α Leonis, Leonid, no head or star seen	„
13	28	4	...		Leonid, through Canopus, short, swift	„
13	34	...	...		Near Antlia, W. to E., slowish, sporadic	„
13	40	2	167–58	173–63	Leonid, 5°, *x* Carinæ to λ Centauri, 20° due N. to S. between Magellanic Clouds, not very swift (Orionid or Taurid)	„ „
13	43	1	181–50	195–60	Leonid, δ Centauri to $13^{h}\ 0^{m}-60^{\circ}$, swift	„
13	49	2	...		In zenith, N. to S. 10°	„
13	59	4				
14	6	3	...		20°, midway between α Leonis and β Crucis. Leonid	„
14	9	2	118–53	97–70	Streak left, χ Argûs to π Doradûs, Leonid	„
14	17	4	...		10°, in Antlia, direction from α Orionis	„
14	33	...	...		Watch discontinued, too much daylight	„
Nov. 14.						
7	20	...	...		Started, no cloud } No meteors.	„
7	37	...	...		Ended „ } No meteors.	
10	25	...	...		Resumed, some cloud in south	„
10	32	♃	160–66	172–63	Splendid meteor with train, L Carinæ to λ Centauri, slow, Orionid?	„
10	37	4	129–53	142–53	Slow, *o* Argûs to between L Velorum and κ Argûs (Orionid?)	„
10	44	3	...		Direction, Sirius towards ζ Argûs, nearer latter, slow, Orionid	„
10	50	1	...		Very short, near Apus, slow, Orionid	„

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G.M.T. 1898 Nov. 13. h m	Mag.	Path From	To.	Notes.	Observ
10 53	1	...		Very short, 1° in Reticulum, direction Achernar to Canopus, sporadic	I. ,,
10 54	1	...		Slow, direction θ Orionis to Sirius, but the path was *much further south*, in Antlia. Two others seen simultaneously (all Orionids)	,, ,,
11 0	3	125°−59°	129°−59°	1°, near ε Argûs towards *d* Velorum (Orionid)	,,
11 3	4	...		In Chameleon. Direction from Orion	,,
11 4	3	...		In Antlia, direction from Canopus, 3°. Sporadic	,,
11 20	3	...		In Volans, 5°, Leonid	,,
11 42	3	93−55	112−79	5°, Very swift, δ Pictoris to ε Mensæ. Leonid	,,
11 54	1	...		Slow, 15°, in Antlia, direction from Orion	,,
12 6	...	...		Gave up.	

The November Meteors, 1898.

(*Communicated by the Astronomer Royal for Scotland.*)

Except in the early part of the night of the 13th, the weather was very unfavourable for the observation of the November meteors on the dates of the two principal showers. Watch was kept for the *Leonids* on the 13th, 14th, and 15th, with the results tabulated below. The observers were R. Copeland, T. Heath, and A. J. Ramsay.

On the 24th watch was kept for the *Bielids* from dusk until past midnight, but the sky was overcast all the time and rain fell at intervals. Although the moon was occasionally seen dimly through misty clouds, no stars were at any time visible. Professor Tacchini has kindly informed me that the sky was fairly clear at Rome from 5^h to 7^h, and especially so towards the east, but that there was an entire absence of the *Andromeda* meteors. At all the other stations from which I have heard, the sky was overcast.

Date. 1898.	Observer.	Duration of Watch.	From—To.	Result.
Nov. 13	R. C.	$2^h\ 11^m$	$11^h\ 17^m$ to $13^h\ 28^m$	One Leonid at $12^h\ 36^m\ 56^s$ ± G.M.T. fron direction of the radiant across α Canun Ven. Nine other meteors, within 30' of the head of Leo, of which only thre appeared to come from the radiant.
	T. H.	$1^h\ 30^m$	11^h to 12^h and $13^h\ 30^m$ to 14^h	One Leonid at $13^h\ 33^m\ 36^s$ ± G.M.T. fron 149° + 25° to 152° + 36°, mag. 2, colou blue. Three smaller meteors with shor paths in neighbourhood of Leo.
	A. J. R.	$1^h\ 33^m$	At intervals between $11^h\ 35^m$ and $13^h\ 50^m$	One Leonid and five other meteor directed *towards* the constellation Leo.